

## Claims

1. Bone screw (1) with a longitudinal axis (2) and a threaded shaft (15), which comprises a threaded section (3) with an external diameter  $D_A$ , a front end (4) of the threaded section and a thread profiler (11), the thread profile (11) having a front threaded flank (7), directed towards the front end (4) of the threaded section, a rear threaded flank (18) and a flank angle  $\beta$ , characterized in that:
  - A) the threaded section (3) has a multiple thread and
  - B) each thread of the threaded section (3) at the front end (4) of the threaded section has a knife-like element (5) with a cutting edge (6).
2. The bone screw (1) of claim 1, characterized in that the threaded section (3) has a double thread.
3. The bone screw (1) of claims 1 or 2, characterized in that the cutting edge (6) encloses a sector angle  $\alpha$  of at least  $45^\circ$  and preferably of at least  $55^\circ$  of a thread.
4. The bone screw (1) of one of the claims 1 to 3, characterized in that the cutting edge (6) is curved convexly.
5. The bone screw (1) of one of the claims 1 to 4, characterized in that the sector angle  $\alpha$  is between  $45^\circ$  and  $200^\circ$  of a thread.
6. The bone screw (1) of claim 5, characterized in that the sector angle  $\alpha$  is between  $55^\circ$  and  $200^\circ$  of a thread.
7. The bone screw (1) of one of the claims 1 to 6, characterized in that the knife-like element (5) encloses an angle  $\beta$  of between  $10^\circ$  and  $60^\circ$  with the rear threaded flank (18).
8. The bone screw (1) of claim 7, characterized in that the knife-like element (5) encloses an angle  $\beta$  of between  $15^\circ$  and  $35^\circ$  with the rear threaded flank (18).
9. The bone screw (1) of one of the claims 1 to 8, characterized in that the cutting edge (6) between the core (10) and the tip (19) of the thread is constructed helically.
10. The bone screw of one of the claims 1 to 9, characterized in that the knife-like element (5) has a cutting angle  $\gamma'$  of between  $20^\circ$  and  $60^\circ$  at least at the tip (19) of the threaded section.

11. The bone screw (1) of claim 10, characterized in that the knife-like element (5) has a cutting angle  $\gamma'$  of between  $35^\circ$  and  $50^\circ$  at least at the tip (19) of the threaded section.

12. The bone screw (1) of one of the claims 1 to 11, characterized in that the knife-like element (5) has a constant cutting angle  $\gamma$ .

13. The bone screw (1) of one of the claims 1 to 12, characterized in at the front end (4) of the threaded section coincides with the front end (8) of the bone screw (1).

14. The bone screw (1) of one of the claims 1 to 13, characterized in that it has a convex front end (8).

15. The bone screw (1) of one of the claims 1 to 14, characterized in that the front end (8) of the bone screw (1) comprises a facet (24), which encloses an angle  $\varphi$  of between  $30^\circ$  and  $90^\circ$  with the longitudinal axis (2).

16. The bone screw (1) of one of the claims 1 to 15, characterized in that the knife-like element (5), viewed from the front end (8) of the bone screw (1), is constructed sickle-shaped with a cutting edge (6) disposed on the outer edge.

17. The bone screw (1) of one of the claims 1 to 16, characterized in that the threaded section (3) comprises at least two thread ridges (25), which have a flank angle  $\delta$  at the core (10) of the threaded section and a flank angle  $\delta'$  at the periphery of the thread.

18. The bone screw (1) of claim 17, characterized in that the flank angle  $\delta$  at the core (10) of the threaded section is larger than the flank angle  $\delta'$  at the periphery of the thread.

19. The bone screw (1) of claims 17 or 18, characterized in that the flank angle  $\delta$  at the core (10) of the threaded section ranges from  $10^\circ$  to  $50^\circ$  and preferably from  $20^\circ$  to  $40^\circ$ .